INNOVATIVE COKE OVEN GAS CLEANING SYSTEM

FOR

RETROFIT APPLICATIONS

QUARTERLY ENVIRONMENTAL MONITORING REPORT NO. 3

FOR THE PERIOD COVERING

JANUARY, 1, 1991 THROUGH DECEMBER 31, 1991
(*including the last quarter 1991*)

PARTICIPANT

BETHLEHEM STEEL CORPORATION

BETHLEHEM, PA

PREPARED FOR THE UNITED STATES DEPARTMENT OF ENERGY

UNDER COOPERATIVE AGREEMENT NO. DE-FC22-90PC89658

OCTOBER 16, 1992

PATENTS CLEARED BY CHICAGO ON November 2, 1992

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BETHLEHEM STEEL CORPORATION

SECTION 1.0 INTRODUCTION

Bethlehem Steel Corporation (BSC), in conjunction with the Department of Energy (DOE) is conducting a Clean Coal Technology (CCT) project at its Sparrows Point, Maryland Coke Oven Plant. This project combines several existing technologies into an integrated system for removing impurities from Coke Oven Gas (COG) to make it an acceptable fuel. DOE is providing cost-sharing under a Cooperative Agreement with BSC.

This Cooperative Agreement requires BSC to develop and conduct an Environmental Monitoring Plan (EMP) for the Clean Coal Technology project and to report the status of the EMP on a quarterly basis. This report is the third quarterly status report of the EMP. It covers the Environmental Monitoring Plan activities for the full year of 1991 from January 1, 1991 through December 31, 1991, including the forth quarter.

See Sections 2, 3 and 4 for status reports of the Project Installation and Commissioning, the Environmental Monitoring activities and the Compliance Monitoring results for the period. Section 5 contains a list of Compliance Reports submitted to regulatory agencies during the period.

1.1 EMP Purpose

The EMP describes in detail the environmental monitoring activities to be performed during the project execution. The purpose of the EMP is to: (1) document the extent of compliance of monitoring activities activities, i.e. those monitoring required to meet permit requirements, (2) confirm the specific impacts predicted in the National Environmental Policy Act documentation, and (3) establish and information base for the assessment of the environmental performance of the technology demonstrated by the project.

1.2 EMP Scope

The EMP as approved by DOE, specifies the streams to be monitored (e.g. clean coke oven gas, ammonia still effluent), and the species to be analyzed (e.g. sulfur compounds, nitrogen compounds, trace elements, etc.). The operation and frequency of the monitoring activities is specified, as well as the timing for the monitoring activities related to project phase (e.g. construction, pre-operational, operational, post-operational). Within the five project phases, monitoring is be broken down into two types. COMPLIANCE monitoring is that which is or will be required under existing and/or anticipated regulatory requirements or permit conditions. SUPPLEMENTAL monitoring includes data

gathering activities deemed important to measure operational or environmental performance, but not required to be measured by permits or regulations. A list of the Compliance and Supplemental sample streams is given in Table 1-1.

1.3 Project Description

The coke plant at the Sparrows Point Plant consists of three coke oven batteries (A, 11 and 12) and two coal chemical plants (A and B). The by-product coke oven gas (COG) consists primarily of hydrogen, methane, carbon monoxide, nitrogen, and contaminants consisting of tars, light oils (benzene, toluene, and xylene) hydrogen sulfide, ammonia, water vapor, and other hydrocarbons. This raw coke oven gas needs to be cleaned of most of its contaminants before it can be used as a fuel at other operations at the Sparrows Point Plant.

In response to environmental concerns, BSC decided to replace much of the existing coke oven gas treatment facilities in the two coal chemical plants (A and B) with a group of technologies consisting of;

- Secondary Cooling of the Coke Oven Gas
- Hydrogen Sulfide Removal
- Ammonia Removal
- Deacification of Acid Gases Removed
- Ammonia Distillation and Destruction
- Sulfur Recovery

The installation of this combination of technologies will replace the existing ammonia removal system, the final coolers, hydrogen sulfide removal system and the sulfur recovery system. The existing wastewater treatment, tar recovery and one of the three light oil recovery systems will continue to be used to support the new, innovative combination of COG treatment technologies. Figures 1-1 and 1-2 are simplified block diagrams of the new COG treatment process.

1.4 EMP Sampling Programs

The EMP consists of a Compliance Monitoring Sampling Program and a Supplemental Monitoring Sampling Program. The Compliance Monitoring Sampling Program will be conducted during a summer and a winter Baseline periods during the Pre-Construction/Construction phases of the Project and during a summer and a winter period following the successful Startup and Operational phase of the completed Project.

Compliance monitoring consist of conducting all the sampling and observation programs associated with existing required Federal, State, and Local Regulations, Permits and Orders. These include air, water, and waste monitoring and OSHA and NESHAP monitoring.

The Supplemental Monitoring Program will also be conducted during a summer and a winter Baseline periods during the Pre-Construction/Construction phases of the Demonstration Facility and during a summer and a winter period following the successful startup and Operational phase of the completed Facility.

Supplemental Monitoring includes sampling of 27 additional streams that are important to measure operational or environmental performance and impacts of the installation of the new COG treatment facilities.

Collecting Compliance Monitoring data and Supplemental Monitoring data during the Baseline and Operational Phases of the Facility will provide a basis for comparing and estimating the impact of the Demonstration Facility on the compliance streams and important influent and effluent streams of treatment facilities.

Collecting Compliance monitoring data and Supplemental Monitoring data during summer and winter periods will provide a basis for demonstrating the impact of ambient temperature on the performance of the Demonstration Facility and hence, the impact on the compliance streams. This is important since the solubility of the hydrogen sulfide and ammonia contaminants in the COG are temperature dependant and the performance of the wet surface air cooler equipment at the initial part of the Demonstration Facility will be impacted by the ambient summer and winter temperatures and humidities.

1.5 Contents of EMP Reports

The quarterly and annual EMP reports will present information on the status of planned supplemental and compliance environmental monitoring activities. It will also contain a brief summary of the results of these monitoring activities. The sampling campaign reports will contain all of the data collected during the various sampling campaigns.

TABLE 1-1 ENVIRONMENTAL MONITORING PLAN SAMPLE STREAMS
List of Compliance and Supplemental Monitoring Streams

A. List of Compliance Streams (Sampled during all Phases of Project)

1. PERMITED STREAMS

STREAM	STREAM NAME
Gaseous	
G-1	Battery 'A' Stack Gas
G-2	Battery 11 Stack Gas
G-3	Battery 12 Stack Gas
Aqueous	
A-5	Monitoring Point 121-Effluent from Waste Water Treatment Plant
A-6	Outfall 021-Discharge to Patapsco River
Solids	
S-4	Sludge Blowdown to BRWWTP from Waste Water Treatment Plant

2. BENZENE NESHAP WASTEWATER STREAMS

A-7	Tar Sludge Decanter
A-8	'A' Flushing Liquor Strainer
A-9	'B' Secondary Decanter
A-10	Final Cooler Emulsified Oil
A-11	Final Cooler Condensate
A-12	Desulfurizer Blowdown
A-13	Coke Oven Drip Condensate
A-14	Gas Pump Tank Condensate
A-15	Light Oil Still Drainage
A-16	Vapor Oil Exchanger Condensate
A-17	Primary Light Oil Condensate
A-18	Secondary Light Oil Condensate
A-19	'B' Reflux Condensate
A-20	Centrifuge Water
A-21	Vapor Oil Exchanger and Centrifuge Condensate
A-22	Secondary Light Oil Tank Drainage

3. OSHA WORKER EXPOSURE DATA-Quarterly Monitoring of Coke Oven and Coal Chemical Worker Exposure

TABLE 1-1 ENVIRONMENTAL MONITORING PLAN SAMPLE STREAMS
List of Compliance and Supplemental Monitoring Streams - continued

B. List of Supplemental Streams

1. Sampled During Pre-Construction/Construction and Operational Phases

STREAM	STREAM NAME
Gaseous	
G-1,G-7	Battery 'A' Stack Gas
G-2	Battery 11 Stack Gas
G-3	Battery 12 Stack Gas
G-5	Blast Furnace Gas to Mixing Station
G-6	Mix Gas to Coke Oven Underfire Burners
G-23	Coke Oven Gas to Mixing Station
Aqueous	
A-24	Composite Feed from Equilization Tank
A-42	Fixed Ammonia Still Wastewater
Solids	
S-26	Coal Mix Feed to Coke Ovens
S-27	Coke Product

OSHA WORKER EXPOSURE DATA-Quarterly Monitoring of Coke Oven and Coal Chemical Worker Exposure

2. Sampled During Operational Phase of Project

STREAM	STREAM NAME
Gaseous	
G-25	Coke Oven Gas to Secondary Cooler
G-29	Coke Oven Gas to H2S Scrubber
G-41	Coke Oven Gas to Light Oil Scrubber
G-54	Air to Catalytic Oxidizer
G-55	Process Gas to Claus Plant
G-57	Tail Gas to Primary Cooler
Aqueous	
A-28	Flushing Liquor and Tar to Tar Decanter
A-31	Flushing Liquor to Secondary Cooler
A-39	Excess Flushing Liquor to Ammonia Scrubber
A-40	Stripped Liquor from Ammonia Still
A-42	Fixed Ammonia Still Wastewater
A-45	NaOH to Fixed Ammonia Still
Solids	
L-32	Tar to Sump of Secondary Cooler
L-56	Sulfur Product from Claus Plant
S-58	Catalytic Oxidizer Spent Catalyst
S-59	Claus Unit Spent Catalyst

Figure 1-1

Bethlehem Steel's Innovative Coke Oven Gas Cleaning System

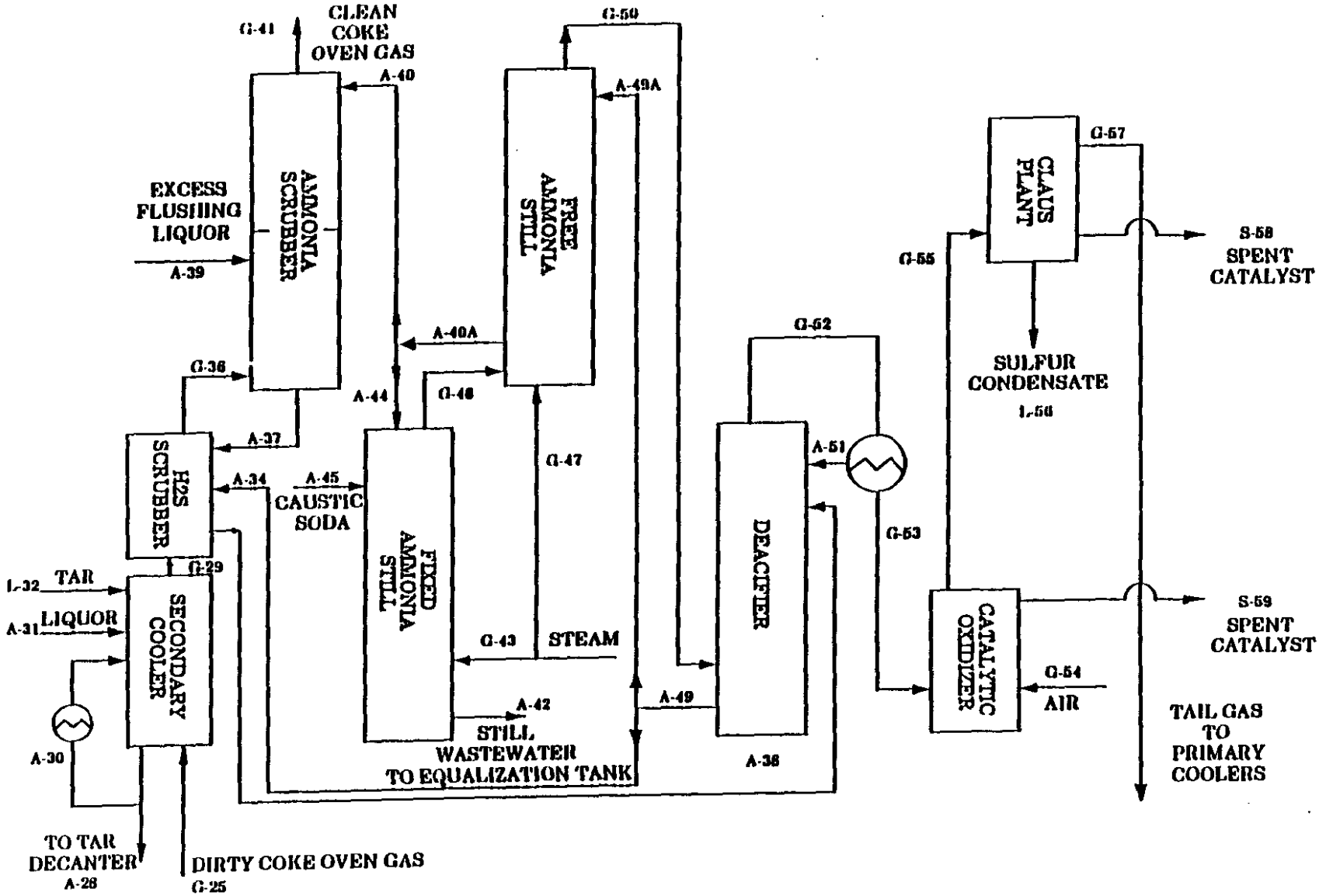
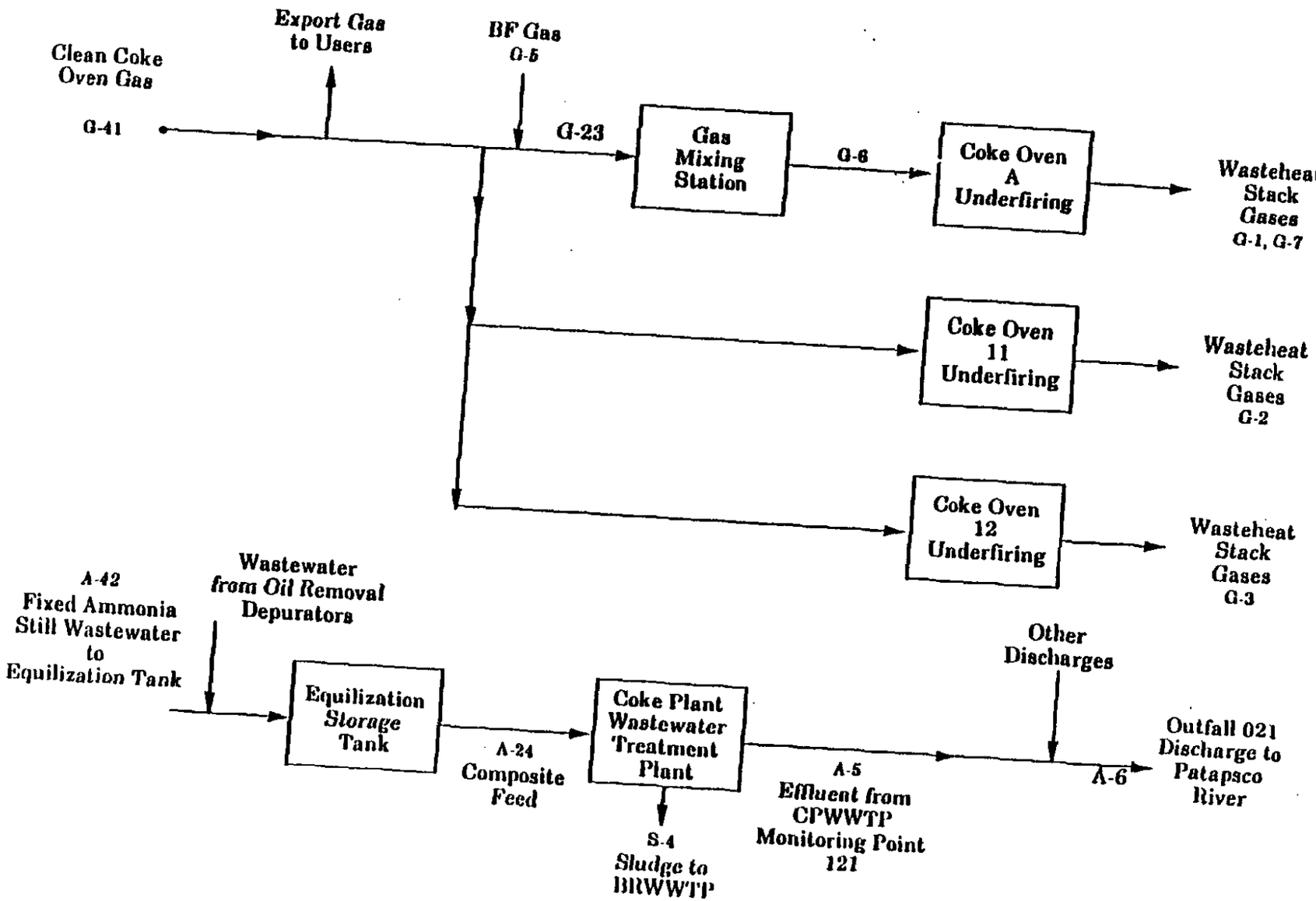


Figure 1-2

Bethlehem Steel's Innovative
Coke Oven Gas Cleaning System
Utilization, Treatment and Disposal of Principal Process Product Streams



SECTION 2.0 PROJECT STATUS

2.1 Installation and Commissioning of Clean Coal Technology (CCT) Facilities

Construction and Commissioning Status. As of the end of December, 1991 the Project Status as noted in the December, 1991 Monthly Report was as follows;

	Percent Complete
Engineering	100 %
Materials Ordered	100 %
Materials Delivered	100 %
Construction	100 %

Construction of the CCT facilities was completed on December 6, 1991.

Cold comissioning with water of the CCT facilities were completed in November, 1991.

Hot Commissioning has been postponed indefinitely pending the outcome of Bethlehem Steel's studies to explore alternatives for the resumption of coke production.

Significant Events and Comments. As a result of Bethlehem Steel's decision in September, 1991, to suspend cokemaking operations at it Sparrows Point plant indefinitly, the production of coke was stopped on December 5, 1991. Battery 'A' and Battery No. 12 were placed on hot idle status and Battery No. 11 was shut down.

Mothballing of the CCT facilities has been completed. All facilities were flushed with water, chemically pacified and filled with nitrogen. All pumps and motors for the facility were preserved in place.

2.2 Environmental Monitoring Plan

The final version of the Environmental Monitoring Plan was issued on July 5, 1991 and sent to the Department of Energy on July 25, 1991.

SECTION 3.0 ENVIRONMENTAL MONITORING STATUS

3.1 Overall Schedule

Figure 3-1 shows the overall schedule of the Innovative Coke Oven Gas Cleaning Project including the design and construction Phases (Phases I and II) and the Environmental and Operational Monitoring Phase (Phase III).

The Environmental Compliance Monitoring portion of the EMP is continuing throughout the duration of the project. All required compliance monitoring was completed during the year.

The Environmental Supplemental Monitoring portion of the EMP began with the completion of the winter baseline sampling period in March, 1991 and was completed with the conduct of the summer baseline sampling period in August, 1991.

3.2 Planned Activities for the Year (1991)

Gaseous, Aqueous and Solid Streams. Baseline Environmental Compliance Monitoring Sampling was planned as required by Federal, State, and local government regulations.

The Baseline Supplemental Monitoring Programs planned were (1) a winter sampling program to be conducted in March, 1991 and (2) a summer sampling program to be conducted in August, 1991. The streams to be sampled were battery combustion stack gases, coal charged and coke produced, blast furnace gas, coke oven gas, combined blast furnace and coke oven gas, ammonia still effluent, and the discharge of the one million gallon storage tank to the bio-oxidation basin.

OSHA Supplemental Personnel Monitoring. During the period personnel monitoring equipment was acquired to monitor personnel in the Coal Chemical Plant areas for exposure to hydrogen sulfide, ammonia, carbon monoxide, and fugitive hydrocarbons. Personnel monitoring for these exposures was scheduled for July and August, 1991.

3.3 Completed Activities This Year (1991)

Gaseous, Aqueous and Solid Streams. The Baseline Compliance Monitoring Sampling Program was completed as required by Federal, State, and Local regulations.

All planned Baseline Supplemental Monitoring Program activities described in 3.2 above were carried out. The battery combustion stack gas analyses were carried out on-site. The liquid and gas samples were collected and submitted to an outside laboratory daily. The liquid and gas samples collected for laboratory submission are listed in Tables 3-1 and 3-2. The coal and coke samples were routinely collected and analyzed by on-site laboratories at the Sparrows Point Plant.

Supplemental Monitoring at Coal Chemical Plants. Supplemental personnel exposure monitoring was conducted during July and August, 1991 at the Coal Chemical plants as required by the EMP.

3.4 Problems With Sampling and Analytical Efforts

There were no major problems with the Compliance Monitoring Sampling Program.

The only Baseline Supplemental Monitoring Samples not collected were the ammonia still effluent for the first day of the first week of the two week winter sampling period and on two days in August for the summer sampling period. The ammonia still was down for repairs during these days and no still effluent was produced. All other samples were collected and preserved according to agreed upon protocols. One "A" battery sulfur dioxide sample was discarded due to a leak in the gas sampling train discovered mid-way through the sampling procedure.

The most significant problem which occured during the year was the very slow performance of the contracted analytical laboratory selected to conduct the chemical analyses of the liquids and gases collected during the winter baseline sampling program. While samples were delivered daily to this laboratory, it was over six months before we received the results, and more importantly several of the samples were held for longer than their maximum holding times for chemical analyses. In view of this unsatisfactory performance, other laboratories were contracted to conduct the chemical analyses of the gaseous and liquid samples collected during the summer baseline sampling program.

3.5 Plans For the Next Reporting Period (1Q92)

The collection of the Baseline Compliance Monitoring Samples will continue as required by Federal, State, and Local regulations.

According to the bar diagram schedule shown in Figure 3-1, the winter sampling period of the Supplemental Environmental program during the Operational Monitoring Phase is scheduled to be conducted in the 1Q92. However, as noted in Section 2.1, the startup of the CCT facility has been postponed indefinitely due to Bethlehem Steel's decision to suspend coke production in December, 1991. Thus, the Operational Monitoring phase of the EMP will also be deferred indefinitely.

FIGURE 3-1 OVERALL SCHEDULE OF INNOVATIVE COKE OVEN GAS CLEANING PROJECT

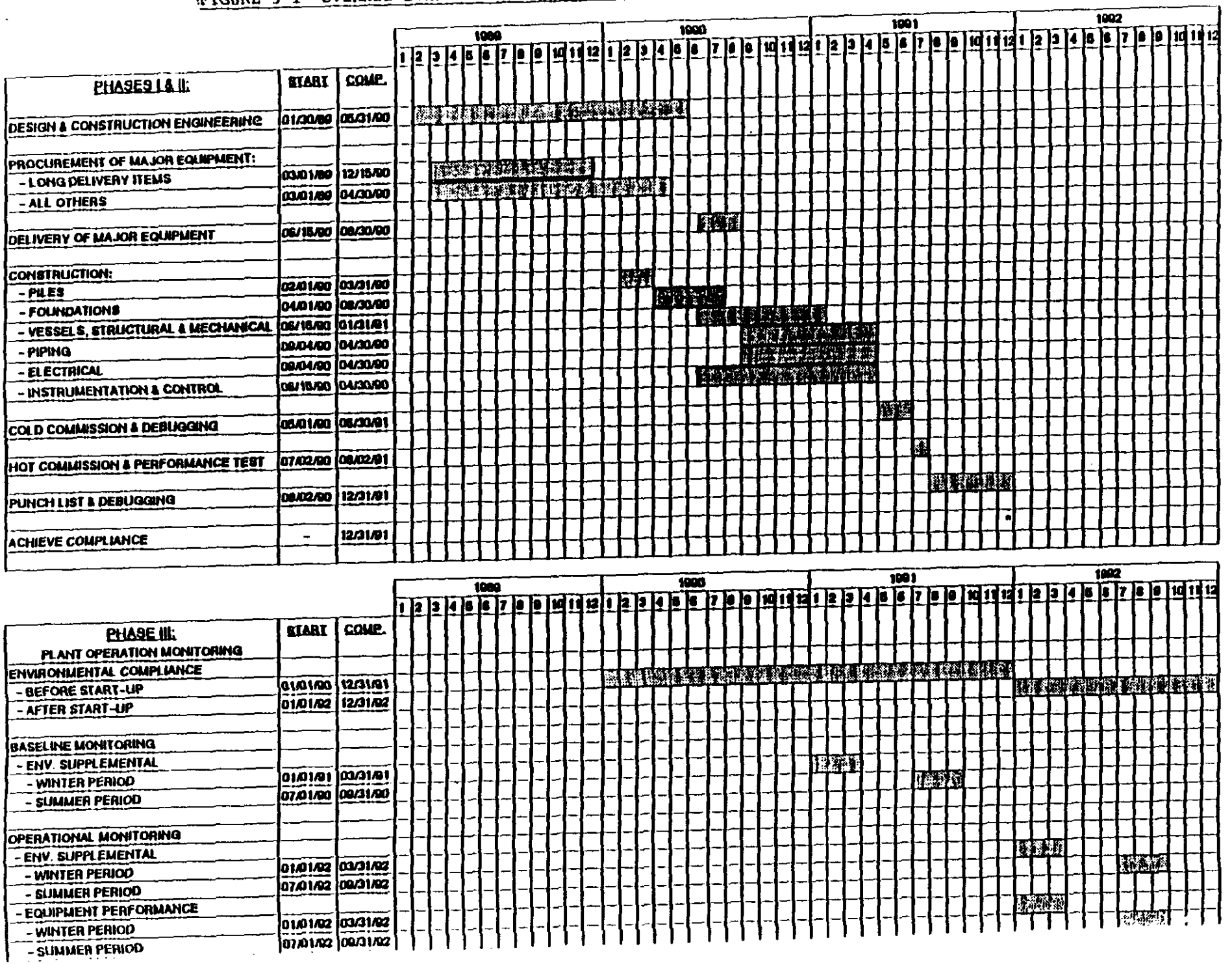


Table 3-1 Sample Time Log for Aqueous Samples
Environmental Monitoring Plan - Supplemental Samples - Winter 1991
Sparrows Point Coke Oven - ICCT Demonstration Project

Sample	Date - 3/19/91				Date - 3/20/91				Date - 3/21/91			
	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time
Ammonia Still Effluent	*	*	*	*	0910	1025	1110	1355	0920	1010	1120	1210
Million Gallon Tank Effluent	0840	1040	1140	1430	0930	1010	1145	1345	0910	1020	1110	1220

Sample	Date - 3/25/91				Date - 3/26/91				Date - 3/27/91			
	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time
Ammonia Still Effluent	0920	1015	1120	1215	0925	1030	1130	1220	0820	1015	1100	1205
Million Gallon Tank Effluent	0910	1020	1115	1220	0920	1035	1125	1225	0830	1010	1105	1200

* - Ammonia Still was down for repairs. No samples were taken.

Table 3-2 Sample Time Log for Gaseous Samples
Environmental Monitoring Plan - Supplemental Samples - Winter 1991
Sparrows Point Coke Oven - ICCT Demonstration Project

Sample	Date - 3/25/91				Date - 3/26/91				Date - 3/27/91			
	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time
Coke Oven/Blast Furnace Mix	0945	1045	1145	1345	0955	1100	1150	[illegible]	1135	1225	1255	1345
Coke Oven Gas	0950	1050	1150	1355	1005	1105	1205	1250	1140	1230	1305	1350
Blast Furnace Gas	1000	1055	1155	1400	1010	1110	1200	1255	1145	1235	1310	1355

Sample	Date - 4/01/91				Date - 4/02/91				Date - 4/03/91			
	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time
Coke Oven/Blast Furnace Mix	1040	1145	1305	1400	0910	1000	1100	1155	0925	1015	1115	1250
Coke Oven Gas	1035	1155	1315	1405	0920	1010	1105	1200	0935	1020	1120	1255
Blast Furnace Gas	1030	1140	1320	1415	0925	1015	1110	1205	0940	1025	1125	1300

SECTION 4.0 COMPLIANCE MONITORING RESULTS - 1991

The following compliance areas of the Sparrows Point Coke Plant will be impacted by the implementation of the new COG treatment system;

- o Coal Chemical Plants A and B
  - Benzene NESHAP emissions
  - OSHA worker exposure monitoring
  - NPDES outfalls 121 (discharge from the coke oven wastewater treatment plant)
  - NPDES outfalls 021 (combined discharges from the coke plant area) plant
  - spills
- o Coke Ovens Batteries No. 11, No. 12 and A
  - waste heat stack for each battery(continuous opacity monitoring)

4.1 Air Compliance Monitoring Results

Coke Oven Waste Heat Stack Monitoring. Continuous opacity monitoring was conducted throughout the period for the waste heat stack emissions for "A" Coke Battery, No. 11 Coke Battery and No. 12 Coke Battery. Quarterly reports of the results were sent to Maryland's Department of Environment in April, July, October in 1991 and January, 1992. No other compliance monitoring for the waste heat stacks was required during the period. Throughout 1991, the waste heat stacks for all three of the coke oven batteries continued to experience exceedances of the applicable opacity standards.

A list of the air compliance reports submitted to the Maryland Department of the Environment during the period is provided in the Appendix (see Section 5.1).

4.2 Water Compliance Monitoring Results - Coke Oven Outfalls

All sampling programs required for compliance monitoring for Outfall 021 and Monitoring Point 121 were completed during the period January 1, 1991 through December 31, 1991. Daily Monitoring Reports were submitted to Maryland Department of Environment and the US EPA-Region III on a monthly basis and non-compliance reports were filed for Outfalls 021 and 121 on an as needed basis. See Section 5.2 for references to Water Compliance Monitoring Reports submitted during the period.

Outfall 021. This is the outfall for all non-contact cooling waters and treated wastewaters from the coke ovens area. During the last quarter of 1991 there were no exceedances of the NPDES permit limitations. Total exceedances for the year were five exceedances of NPDES permit limitations. These were reported to the Maryland Department of the Environment and to Region III of the EPA.

Monitoring Point 121. This monitoring point is the discharge from the coke oven wastewater biological treatment plant. It is a tributary to Outfall 021. During the last quarter of 1991 there were six exceedances of the NPDES permit limitations; five exceedances of daily ammonia and one exceedance of the daily total suspended solids limitation. There were ten exceedances of NPDES permit limitation for the year.

4.3 Solid Waste Compliance Monitoring Results

Sludge Blowdown to Back River WasteWater Treatment Plant. The coke oven wastewater biological treatment plant sludge that is discharged to Baltimore's Back River Municipal Wastewater Treatment plant was sampled during the last quarter of the month on October 8, November 11, and December 5, 1991. The analytical results of this sampling program were submitted to the Bureau of Utilities of Baltimore County on December 6, 1991 and on January 20, 1992. A list of the reports to the Bureau of Utilities of Baltimore County during the period is provided in Appendix 5, Section 5.3

Spills. During the last quarter of 1991 there were four (4) spill incidences in the coke oven areas. One of these spills was probably above the equivalent Reportable Quantity for these materials.

For the year 1991, there were thirty six (36) spill incidences in the coke plant areas. Eight(8) of the spill incidences were above the equivalent Reportable Quantity for these materials. All incidences were reported by telephone to either the Maryland Department of the Environment, the U. S Coast Guard, or the National Response Center. The dates of the telephone calls and a brief description of the spills reported are listed in the Appendix, Section 5.3.

4.4 Benzene NESHAP Monitoring Results

Equipment Monitoring. A large number of pumps, valves and other equipment in the Coal Chemical Plants at Sparrows Point are monitored for benzene leaks using a Foxboro Organic Vapor Analyzer on a monthly, quarterly, semi-annual and annual basis according to a prescribed protocol. This monitoring is done for the Sparrows Point Plant by an outside contractor. All required monitoring for the year 1991 was completed, and the results of this monitoring were reported by the contractor to the Sparrows Point Plant. During the period there were no exceedances of the applicable standards. The results of these monitoring were also reported by Sparrows Point to the U. S. Environmental Protection Agency on June 24 and December 26, 1991.

Waste Water Streams. No sampling or analyses was conducted during the year on the 16 Benzene NESHAP wastewater streams listed in Table 1-1, Section A.2.

A list of the Benzene NESHAP monitoring reports submitted to Maryland during the period is provided in Appendix 5, Section 5.4.

4.5 OSHA Monitoring Results

Coal Chemical Plants. All required OSHA personnel exposure monitoring was conducted during the year and reported internally to Coke Plant Operations. There is no reporting requirement to either State or Federal Agencies.

In those areas where the exposure limit was greater than the permissible exposure limit appropriate control measure are inplace.

Supplemental Monitoring at Coal Chemical Plants. No Supplemental Monitoring was conducted during the last quarter of the year. All Supplemental Monitoring required by the EMP was completed during July and August, 1991. Forty two (42) workers in this area were monitored for exposure to hydrogen sulfide, fugitive hydrocarbons and carbon monoxide monitoring was done in July, 1991, and ammonia and hydrogen sulfide monitoring was done in August, 1991. Reports of the results of this monitoring were sent to the Coke Plant management.

SECTION 5.0 APPENDIX

List of Compliance Reports
Submitted January 1, 1991 through December 31, 1991

5.1 AIR COMPLIANCE REPORTS

1. Coke Oven Wasteheat Stack Opacity Measurements - Quarterly Reports

    1. Mr Ronald E. Lipinski, Administrator
       Enforcement Programs
       Air Management Administration
       Maryland Department of the Environment
       2500 Broeing Highway
       Baltimore, Maryland 21224

       April 18, 1991 (for 1st Qtr 1991)
       July 22, 1991 (for 2nd Qtr 1991)
       October 25, 1991 (for 3rd Qtr 1991)
       January 27, 1992 (for 4th Qtr 1991)

2. Coke Oven Wasteheat Stack Opacity Measurements - Monthly Reports

    1. Mr Ronald E. Lipinski, Administrator
       Enforcement Programs
       Air Management Administration
       Maryland Department of the Environment
       2500 Broeing Highway
       Baltimore, Maryland 21224

       August 8, 1991
       September 16, 1991
       November 14, 1991
       December 6, 1991

5.2 WATER COMPLIANCE REPORTS

1. Non-Compliance Reports for NPDES Monitoring Program - Outfall 021

   1. Mr. James Metz, Administrator
      Enforcement Programs
      Water Management Administration
      Maryland Department of the Environment
      2500 Broeing Highway
      Baltimore, Maryland 21224

      Reports issued on April 2, 1991 (correction from 2Q91
      June 12, 1991 Status Report)
      July 23, 1991
      September 12, 1991
      October 7, 1991

2. Non-Compliance Reports for NPDES Monitoring Program - Outfall 121

   1. Mr. James Metz, Administrator
      Enforcement Programs
      Water Management Administration
      Maryland Department of the Environment
      2500 Broeing Highway
      Baltimore, Maryland 21224

      Reports issued on August 14, 1991, and September 12, 1991

3. Daily Monitoring Reports for NPDES Monitoring Program

   1. Mr. James Metz, Administrator
      Enforcement Programs
      Water Management Administration
      Maryland Department of the Environment
      2500 Broeing Highway
      Baltimore, Maryland 21224

      and

      United States Environmental Protection Agency
      Region III: Attention 3WM-55
      841 Chestnut Building
      Philadelphia, PA 19107

      Reports issued February 28, 1991
      March 28, 1991
      April 26, 1991
      May 29, 1991
      June 28, 1991
      July 29, 1991
      August 27, 1991
      September 27, 1991
      October 28, 1991
      November 27, 1991
      December 30, 1991
      January 27, 1992
      February 28, 1992

5.3 SOLID WASTE COMPLIANCE REPORTS

1. Analyses of Sludge Blowdown to Back River Wastewater Treatment Plant

   to

   Mr. Gary Sipes
   Bureau of Utilities
   Pollution Control Section
   9901 York Road
   Cockesyville, MD 21030

   July 1, 1991 (report for first half of 1991)
   December 6, 1991 (report for second half of 1991)
   January 20, 1992 (report of required followup sampling for second half of 1991)

2. Telephone Reporting of Spills to

   (a) James Lizear, Acting Head
   Hazardous and Solid Waste Management
   Maryland Dept. of Environment
   2500 Broeing Highway
   Baltimore, Maryland 21224
   Telephone No. 301-631-3400

   (b) National Response Center
   800-424-8802
   (for oil to water and reportable quantity spills)

   (c) U. S. Coast Guard
   Marine Safety Office
   U. S. Customs House
   40 So. Gay St.
   Baltimore, MD 21202-4022
   Telephone No. 301-962-5100

List of Spills in the Sparrows Point Coke Plant Area - 1991

Date	Spill Description
01/14/91	ammonia liquor at "A" Battery (approx. 5000 gallons).
02/10/91	Primary Light Oil at ball mill (approx. 100 gallons).
02/20/91	ammonia liquor at "A" Coal Chemical Plant (approx. 50 gal)
02/26/91	flushing liquor at No. 11 and No. 12 Battery Decanters - (approx. 150 gallons).
03/01/91	wash oil at the "A" Coal Chemcal Plant (approx. 500 gal)
03/02/91	ammonia sludge at the "B" Coal Chemical Plant (approx. 200 gals)
03/04/91	mother liquor at the "A" Coal Chemical Plant (approx. 700 gals)
03/20/91	saturator acid to Outfall 021 (approx. 100 gallons).
03/25/91	oil to Outfall 021 (approx. 20 gallons). *
04/05/91	ammonia liquor and tar at "B"CoalChemical Plant(approx.200 gals)
04/14/91	sulfuric acid at the "B" Coal Chemical Plant (approx. 75 gals)
04/19/91	sulfuric acid at the "B" Coal Chemical Plant (amount unknown)
05/06/91	wash oil at the wastewater tank (approx. 350 gallons).
05/10/91	wash oil at the coke oven gas holder (approx. 600 gallons).
05/13/91	sulfuric acid at the "A" Coal Chemical Plant (approx. 500 gals).
05/30/91	Primary Light Oil at ball mill (approx. 25 gals).

Date	Spill Description - continued		
06/03/91	acid to Outfall 021 (amount unknown).		
06/04/91	acid to Outfall 021 (amount unknown).		
06/20/91	wash oil at the "A" Coal Chemical Plant	(approx. 50 gallons)	
06/20/91	wash oil at No. 40 tank	(approx. 50 gallons).	
06/23/91	sulfuric acid at a railroad tank car.	(approx. 2 gallons)	
07/01/91	wash oil from 'B' Plant Final Cooler.	(approx. 15 gallons)	
07/16/91	coal tar from transfer line.	(approx. 300 gallons)	
07/31/91	phosphoric acid from tank suction line	(approx. 100 gallons)	
08/08/91	wash oil to outfall 021 from cooler	(approx. 20 gallons)	*
08/11/91	wash oil from coke oven gas holder	(approx.1000 gallons)	*
08/21/91	wash oil from storm runoff(?)	(approx. 75 gallons)	*
08/23/91	coal tar from decanters	(approx. 100 gallons)	
08/30/91	flushing liquor from 'B' Saturators	(unknown amount)	
08/30/91	wash oil from pumps	(approx. 75 gallons)	*
09/09/91	wash oil from scrubber sump	(approx. 75 gallons)	*
09/18/91	wash oil from storm runoff(?)	(approx. 100 gallons)	*
10/12/91	wash oil during transfer operation	(approx. 50 gallons)	
10/18/91	wash oil from 'A' scrubber mat	(approx. 50 gallons)	
12/02/91	coal tar from drain line	(approx. 500 gallons)	
12/14/91	wash oil from broken suction pipe	(approx.4200 gallons)	

* Indicates the spill may have exceeded the reportable quantity for this material.

5.4 BENZENE NESHAP MONITORING AND SAMPLING PROGRAM

1. Equipment Monitoring Program - Semi-Annual Reports sent to

Mr. Thomas Maslany
Air Management Division
United States Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

Reports issued on January 21, 1991,
June 24, 1991 and
December 26, 1991.

Summary of Benzene Leak Detection for Period (1991)

	------ Number of Leaking ----------		
	Valves	Pumps	Exhausters
Sampling Frequency	monthly	monthly	quarterly
Month - January	1	0	-
- February	0	0	-
- March	0	0	0
- April	1	0	-
- May	0	0	-
- June	5	1	0
- July	1	0	-
- August	0	1	-
- September	0	0	0
- October	0	0	-
- November	0	0	1
- December	0	0	-

2. Benzene NESHAP Wastewater Sampling Program

No reports during the period.

5.4 OSHA - PERSONNEL MONITORING

1. Compliance Monitoring

No required reporting to State or Federal Agencies.
Internal Sparrows Point Plant reports are written to transmit exposure monitoring results to Coke Oven Operations.
monitoring results to Coke Oven Operations.

2. Supplemental Personnel Monitoring

No supplemental personnel monitoring was conducted in the fourth quarter, 1991.
Supplemental personnel monitoring was conducted in 1991 during July and August for exposure to hydrogen sulfide, carbon monoxide, ammonia and fugitive hydrocarbons. The results of these measurements were reported to Sparrows Point Coke Oven management.